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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/892,144	06/26/2001	Robert J. Schroeder	60.1413	2201

7590 02/04/2003

Intellectual Property Department  
Schlumberger-Doll Research  
Old Quarry Rd.  
Ridgefield, CT 06877

EXAMINER

VALENCIA, DANIEL E

ART UNIT	PAPER NUMBER
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2874

DATE MAILED: 02/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/892,144

Applicant(s)

SCHROEDER, ROBERT J.

Examiner

Daniel E Valencia

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on Jan. 9, 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

This Office Action is in response to the communication filed January 9, 2003.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Weis U.S. Patent No. 5,808,779. Refer to the appropriate drawings or parts of the specification. Weis discloses an optical fiber modulation demodulation system with all the limitations of the present invention. Regarding claims 1 and 12, Weis discloses an oilfield monitoring system (fig 6 and 7) comprising: a optical fiber (ref 20) deployed in an oilfield; a plurality of optical sensors coupled with the optical fiber (ref 330, 340, 350, 360); a plurality of non-optical sensors (ref 331, 341, 351, 361 and col. 6, lines 45-50); an at least one converter coupling at least one of the plurality of non-optical sensors with the optical fiber, wherein the pluralities of optical and non-optical sensors are deployed throughout the oilfield (col. 17, lines 20-30). Although Weis does not explicitly state that the Bragg gratings optically sense the external conditions themselves without the aid of another device, the optical gratings intrinsically embedded in fiber inherently function as optical sensor to sense the external conditions. Whether the grating is sensing the external condition or a perturbation from the piezoelectric element indicative of the external condition, it

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nevertheless senses the external conditions. Therefore, the Bragg gratings embedded within the fiber inherently function as optical sensors to sense the external conditions.

Weis further discloses that the optical sensor comprises an intrinsic fiber sensor made up of a Bragg grating encircled by coating that converts a non-optical signal into strain on the fiber Bragg grating (col. 6, lines 50-60), as explained in instant claims 2, 3, 8, and 16. Referring to claim 4, Weis further discloses that the optical sensor also includes one of a variety of sensors described in the claim (col. 6, lines 35-65). Weis discloses that his device further comprises one of the variety of non-optical sensors listed in claim 5 (col. 6, lines 47). Regarding claims 6, 7, 15, and 17, Weis discloses that his device further comprises a converting electro-optic device coupling the non-optical sensor with the optical fiber. Weis further discloses the use of a detector and a source coupled with the optical fiber, wherein the detector and source are positioned at the surface of the oilfield (fig. 7 and col. 6, lines 22-55), as explained in instant claims 9-11, 18, and 19. Referring to claims 13 and 14, Weis discloses that the optical fiber is deployed in a borehole that traverses an oilfield (fig 7) and the plurality of non-optical sensors are positioned remotely (col. 6, lines 10-17) from the optical fiber. Weis further discloses that the optical signals can be multiplexed in wavelength, time or frequency (col. 6, lines 15-20), as mentioned by instant claims 21-23. With reference to claims 25 and 27, Weis discloses that his device transmits a plurality of wavelengths through an optical fiber; and inputs each wavelength of light to an optical sensor, wherein the optical sensor modifies the wavelength of light to produce corresponding optical signals (col. 6).

Regarding method claims 20, 24, and 26, the steps described in the claims would have been inherently carried out by using the device disclosed by Weis.

### *Conclusion*

Applicant's arguments filed January 9, 2003 have been fully considered but they are not persuasive.

Applicant traverses the rejection of claims 1-27 by asserting that the elements (330,340,350, and 360) in the Weis reference are not optical sensors. This argument has been fully addressed in the rejection(s) of claims 1-27 above, and is not persuasive.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Fernald U.S. Patent Application Publication No. 2002/0172446 discloses a pressure isolated Bragg grating temperature sensor for remote sensing systems, wherein the Bragg grating makes an intrinsic sensor.

Bosselmann U.S. Patent Application No. 2002/0196994 A1 discloses an optical measurement device in a pressed-in conductor bar in an electrical machine, wherein the sensor can be used in boreholes in wells.

Kersey U.S. Patent Application No. 2002/0063866 A1 discloses a method and apparatus for interrogating fiber optic sensors for use with monitoring the flow of petroleum in boreholes.

Wu U.S. Patent No. 6,137,621 discloses an acoustic logging system using fiber optics, wherein the sensors can be used to monitor external conditions in a borehole.

Frederick U.S. Patent No. 6,288,975 B1 discloses an acoustic sensing system for downhole seismic applications utilizing an array of fiber optic sensors.

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**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel E Valencia whose telephone number is (703)-305-4399. The examiner can normally be reached on Monday-Friday 9:30-6:00.

The fax phone numbers for the organization where this application or proceeding is assigned are (703)-308-7724 for regular communications and (703)-308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)-308-0956.

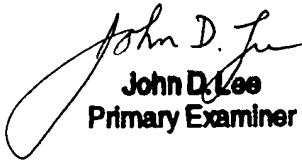
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January 30, 2003

  
**John D. Lee**  
**Primary Examiner**